REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-6 are presently active in this case. The present Amendment amends Claims 1 and 3-6. The above amendment shows the amended claims in clean form, the attachment shows a marked up copy for the Examiner's convenience.

In the outstanding Office Action, Claims 1-6 were rejected under 35 U.S.C. § 102(e) as being anticipated by Hokodate et al. (U.S. Patent No. 6,353,203).

Initially, it is respectfully requested that the documents listed on the Form 1449 accompanying the Information Disclosure Statements filed December 24, 2002 and January 24, 2003 be acknowledged as having been considered.

In response to the rejection of Claims 1-6 under 35 U.S.C. § 102(e), Claims 1, 3-6 have been amended to clarify Applicants' invention. In light of the changes to the independent claims, Applicants respectfully request reconsideration of the outstanding rejections as discussed next.

The present amendment amends independent Claims 1, 3-6 to recite that the scanning optical unit includes a coupling lens that couples the light beam from the light source. Furthermore, the amended claims specify that the corrector lens of the temperature compensation unit provides a refraction power to the coupled light beam from the coupling lens with respect to at least one of a main scanning direction and a sub-scanning direction. These features find support in the disclosure as originally filed, for example at page 13, lines 11-16, and at page 20, lines 3-8, with corresponding Figs. 1 and 3, which show a coupling lens (2) as part of the scanning unit. In addition, the specification at page 13, line 24 to page 14, line 1 and at page 20, lines 12-16 provides support for the recitation that the corrector lens

provides a refraction power to the coupled light beam from the coupling lens, with respect to at least one of a main scanning direction and a sub-scanning direction. These changes, therefore, are not believed to raise a question of new matter.[1]

The outstanding Office Action states that Fig. 44 of the Hokodate et al. patent discloses an optical scanning device which includes: a light source (1), a scanning optical unit including scanning mirrors (3, 4) and a converging lens (20), a temperature detection unit (26), and a temperature compensation unit including control circuit (124) and a corrector lens (121). The Hokodate et al. patent, however, fails to teach or suggest the optical scanning system, as recited in the amended claims.

Specifically, the movable lens 121 disclosed by Hokodate et al. (figure 44; column 32, lines 20-51) is a movable lens included in the collimator lens 120. Focusing of the laser beam L on a scanned surface W is performed according to a change in the position of the movable lens 121 in the direction of its optical axis. The change of the movable lens position is controlled in accordance with a temperature change detected by the temperature detecting unit.

The Hokodate et al. patent, however, fails to teach the "corrector lens" of the temperature compensation unit as recited in Applicants' claims. In the Hokodate et al. system, movement of the movable lens 121 in the direction of the optical axis would appear to change the $f\theta$ characteristics (the constant-velocity characteristics) of the converging lens 20, which would cause the quality of an image on the scanned surface to deteriorate.

As recited in independent claims, in the optical scanning system of the Applicants' invention, the focal-point position of the light beam is adjusted by directly varying a focusing

[1] See MPEP 2163.06 stating that "information contained in any one of the specification, claims or drawings of the application as filed may be added to any other part of the application without introducing new matter."

effect of a corrector lens on the light beam by a controlled amount of movement of the corrector lens along its optical axis that corresponds to the temperature change. The corrector lens (shown as element 3 in Applicant's Fig. 1 and as elements 11-12 in Fig. 3) provides a refraction power to the light beam from the coupling lens with respect to at least one of the main scanning direction and the sub-scanning direction on the scanned surface.

By contrast, in the Hokodate et al. optical scanning system, focusing is executed according to a change in the position of the movable lens 121 in the direction of the optical axis. The Hokodate et al. patent does not teach or suggest adjusting the focal-point position of the light beam with respect to at least one of the main scanning direction and the sub-scanning direction in accordance with the temperature change, as in Applicants' claimed invention. Furthermore, such an adjustment would be difficult to perform with the Hokodate et al. optical scanning system so that a person of ordinary skilled in the art would not be motivated to modify the teachings of the Hokodate et al. patent in order to arrive at Applicants' claimed invention.

In view of the above, the cited prior art fails to teach or suggest every feature recited in Applicants' claims, so that Claims 1-6 are believed to be patentably distinguishable over the cited prior art. Accordingly, Applicants respectfully traverse, and request reconsideration of, the rejections based on the Hokodate et al. patent.[2]

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1-6 is earnestly solicited.

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[2] See MPEP 2131: "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference," (Citations omitted) (emphasis added). See also MPEP 2143.03: "All words in a claim must be considered in judging the patentability of that claim against the prior art."

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicant's undersigned representative at the below listed telephone number.

Respectfully submitted,

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IN THE CLAIMS

Please amend Claims 1 and 3-6 as follows:

--1. (Amended) An optical scanning device comprising:

a light source emitting a light beam;

a scanning optical unit deflecting the light beam from the light source and focusing the deflected light beam to form a light spot on a scanned surface, the scanned surface being scanned by the light beam from the scanning optical unit;

a temperature detection unit detecting a temperature of the scanning optical unit and its neighboring locations; and

a temperature compensation unit adjusting a focal-point position of the light beam on the scanned surface in accordance with a change in the temperature detected by the temperature detection unit, the temperature compensation unit adjusting the focal-point position of the light beam by directly varying a focusing effect of a corrector lens on the light beam from the light source by a controlled amount of movement of the corrector lens along its optical axis that corresponds to the temperature change,

wherein the scanning optical unit comprises a coupling lens coupling the light beam from the light source, and the corrector lens of the temperature compensation unit providing a refraction power to the coupled light beam from the coupling lens with respect to at least one of a main scanning direction and a sub-scanning direction.

3. (Twice-Amended) An optical scanning device comprising:

a light source emitting a light beam;

a scanning optical unit deflecting the light beam from the light source and focusing the deflected light beam to form a light spot on a scanned surface, the scanned surface being scanned by the light beam from the scanning optical unit;

a temperature detection unit detecting a temperature of the scanning optical unit and its neighboring locations; and

a temperature compensation unit adjusting a focal-point position of the light beam on the scanned surface in accordance with a change in the temperature detected by the temperature detection unit, the temperature compensation unit adjusting the focal-point position of the light beam by directly varying a focusing effect of a corrector lens on the light beam from the light source by a controlled amount of movement of the corrector lens along its optical axis that corresponds to the temperature change,

wherein the temperature compensation unit includes a memory that stores a table defining a relationship between the temperature change and a corresponding focal-point deviation of the light beam on the scanned surface, the temperature compensation unit adjusting the focal-point position of the light beam based on the focal-point deviation read from the memory in response to the temperature change, and

wherein the scanning optical unit comprises a coupling lens coupling the light beam from the light source, and the corrector lens of the temperature compensation unit providing a refraction power to the coupled light beam from the coupling lens with respect to at least one of a main scanning direction and a sub-scanning direction.

4. (Twice-Amended) An optical scanning device comprising:

a light source emitting a light beam;

a scanning optical unit deflecting the light beam from the light source and focusing the deflected light beam to form a light spot on a scanned surface, the scanned surface being scanned by the light beam from the scanning optical unit;

a temperature detection unit detecting a temperature of the scanning optical unit and its neighboring locations; and

a temperature compensation unit adjusting a focal-point position of the light beam on the scanned surface in accordance with a change in the temperature detected by the temperature detection unit, the temperature compensation unit adjusting the focal-point position of the light beam by directly varying a focusing effect of a corrector lens on the light beam from the light source by a controlled amount of movement of the corrector lens along its optical axis that corresponds to the temperature change,

wherein an integrated circuit board having a function that is different from a temperature compensation function is provided, the temperature detection unit being integrally formed on the integrated circuit board, and

wherein the scanning optical unit comprises a coupling lens coupling the light beam from the light source, and the corrector lens of the temperature compensation unit providing a refraction power to the coupled light beam from the coupling lens with respect to at least one of a main scanning direction and a sub-scanning direction.

5. (Amended) An optical scanning method comprising the steps of:

emitting a light beam from a light source;

deflecting the light beam from the light source by a scanning optical unit;

focusing the deflected light beam by the scanning optical unit to form a light spot on a scanned surface, the scanned surface being scanned by the light beam from the scanning optical unit;

detecting a temperature of the scanning optical unit and its neighboring locations; and

adjusting a focal-point position of the light beam on the scanned surface in accordance with a change in the temperature detected in the detecting step, the focal-point position of the light beam being adjusted by directly varying a focusing effect of a corrector lens on the light beam from the light source by a controlled amount of movement of the corrector lens along its optical axis that corresponds to the temperature change,

wherein the scanning optical unit comprises a coupling lens coupling the light beam from the light source, and the corrector lens providing a refraction power to the coupled light beam from the coupling lens with respect to at least one of a main scanning direction and a sub-scanning direction.

6. (Amended) An image forming apparatus in which an optical scanning device is provided, the optical scanning device comprising:

a light source emitting a light beam;

a scanning optical unit deflecting the light beam from the light source and focusing the deflected light beam to form a light spot on a scanned surface, the scanned surface being scanned by the light beam from the scanning optical unit;

a temperature detection unit detecting a temperature of the scanning optical unit and its neighboring locations; and

a temperature compensation unit adjusting a focal-point position of the light beam on the scanned surface in accordance with a change in the temperature detected by the temperature detection unit, the temperature compensation unit adjusting the focal-point position of the light beam by directly varying a focusing effect of a corrector lens on the light beam from the light source by a controlled amount of movement of the corrector lens along its optical axis that corresponds to the temperature change,

wherein the scanning optical unit comprises a coupling lens coupling the light beam from the light source, and the corrector lens of the temperature compensation unit providing a refraction power to the coupled light beam from the coupling lens with respect to at least one of a main scanning direction and a sub-scanning direction.--

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